

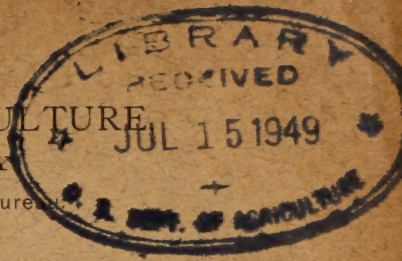
Historic, archived document

Do not assume content reflects current
scientific knowledge, policies, or practices.

TECHNICAL SERIES, No. 11.

U. S. DEPARTMENT OF AGRICULTURE
BUREAU OF ENTOMOLOGY

L. O. HOWARD, Entomologist and Chief of Bureau



REYNOLDS LIBRARY
A CLASSIFICATION OF THE MOSQUITOES OF
NORTH AND MIDDLE AMERICA.

PREPARED UNDER THE DIRECTION OF THE ENTOMOLOGIST

BY

D. W. COQUILLET,

Assistant Entomologist.



WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1906.

BUREAU OF ENTOMOLOGY.

L. O. HOWARD, *Entomologist and Chief of Bureau.*

C. L. MARLATT, *Entomologist and Acting Chief in absence of Chief.*

R. S. CLIFTON, *Chief Clerk.*

F. H. CHITTENDEN, *in charge of breeding experiments.*

A. D. HOPKINS, *in charge of forest insect investigations.*

W. D. HUNTER, *in charge of cotton boll weevil investigations.*

F. M. WEBSTER, *in charge of cereal and forage-plant insect investigations.*

A. L. QUAINANCE, *in charge of deciduous-fruit insect investigations.*

FRANK BENTON, *in charge of apicultural investigations.*

E. A. SCHWARZ, D. W. COQUILLETT, TH. PERGANDE, NATHAN BANKS, *Assistant Entomologists.*

E. S. G. TITUS, AUGUST BUSCK, OTTO HEIDEMANN, A. N. CAUDELL, R. P. CURRIE, J. G. SANDERS, F. D. COUDEN, E. R. SASSCER, J. H. BEATTIE, I. J. CONDIT, *Assistants.*

R. C. ALTHOUSE, W. F. TASTET, MARY G. CHAMPNEY, A. J. LEISTER, E. C. WOOD, T. A. KELEHER, JESSIE E. MARKS, *Stenographers and Clerks.*

LILLIAN L. HOWENSTEIN, *Artist.*

MABEL COLCORD, *Librarian.*

H. E. BURKE, W. F. FISKE, J. L. WEBB, J. F. STRAUSS, *engaged in forest insect investigations.*

W. E. HINDS, A. W. MORRILL, SPRINGER GOES, J. C. CRAWFORD, W. A. HOOKER, W. W. YOTHERS, A. C. MORGAN, W. D. PIERCE, F. C. BISHOPP, C. R. JONES, F. C. PRATT, C. E. SANBORN, J. D. MITCHELL, WILMON NEWELL, J. B. GARRETT, C. W. FLYNN, *engaged in cotton boll weevil investigations.*

G. I. REEVES, W. J. PHILLIPS, *engaged in cereal and forage-plant insect investigations.*

FRED JOHNSON, A. A. GIRALT, A. H. ROSENFELD, *engaged in deciduous-fruit insect investigations.*

E. F. PHILLIPS, J. M. RANKIN, LESLIE MARTIN, *engaged in apicultural investigations.*

C. J. GILLISS, W. A. KELEHER, MARIE REY, MABEL F. CLAYTON, *engaged in silk investigations.*

TECHNICAL SERIES, No. 11.

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF ENTOMOLOGY.

L. O. HOWARD, Entomologist and Chief of Bureau.

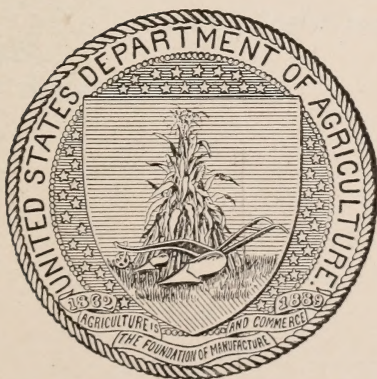
A CLASSIFICATION OF THE MOSQUITOES OF
NORTH AND MIDDLE AMERICA.

PREPARED UNDER THE DIRECTION OF THE ENTOMOLOGIST

BY

D. W. COQUILLET,

Assistant Entomologist.



WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1906.

LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF ENTOMOLOGY,
Washington, D. C., March 15, 1906.

SIR: I have the honor to submit a manuscript entitled "A Classification of the Mosquitoes of North and Middle America," prepared by Mr. D. W. Coquillett, assistant entomologist. The Department so frequently receives requests for information concerning this subject from students of entomology, from physicians, and from persons engaged in sanitary work that the desirability of an explicit publication on this subject is very obvious. I therefore urge that the manuscript be published as Technical Series, No. 11, of this Bureau.

Respectfully,

L. O. HOWARD,
Entomologist and Chief of Bureau.

Hon. JAMES WILSON,
Secretary of Agriculture.

CONTENTS.

	Page
Introduction	7
Subfamilies of the Culicidæ	9
Table of the subfamilies	11
Subfamily Anophelinæ	12
Table of the genera	12
Genus Myzomyia	12
Genus Anopheles	12
Genus Cyclolepteron	13
Genus Nototricha	13
Genus Cellia	13
Subfamily Megarhininæ	14
Genus Megarhinus	14
Subfamily Psorophorinæ	14
Genus Psorophora	14
Subfamily Culicinæ	15
Table of the genera	15
Genus Lepidosia	16
Genus Janthinosoma	17
Genus Stegomyia	17
Genus Verrallina	17
Genus Lepidoplatys	18
Genus Aedes	18
Genus Ochlerotatus	18
Genus Grabhamia	21
Genus Lutzia	22
Genus Culicella	22
Genus Theobaldia	22
Genus Culiseta	22
Genus Culex	23
Genus Melanoconion	23
Genus Tinolestes	24
Genus Micraëdes	24
Genus Isostomyia	24
Genus Tæniorhynchus	24
Genus Mansonia	25
Genus Aèdeomyia	25
Genus Hæmagogus	25
Genus Cacomyia	25
Genus Gymnometopa	25
Genus Howardina	26
Genus Pneumaculex	26

Subfamilies of the Culicidæ—Continued.	Page.
Subfamily Deinoceritinæ.....	26
Genus Deinocerites	26
Subfamily Uranotæniinæ.....	26
Genus Uranotænia.....	26
Subfamily Trichoprosoponinæ.....	26
Table of the genera	26
Genus Trichoprosopon.....	27
Genus Wyeomyia	27
Genus Dendromyia.....	27
Genus Phoniomyia	27
Genus Limatus.....	27
Genus Sabethoides.....	27
Genus Sabethes	28
Index	29

ILLUSTRATION.

FIG. 1. Wing of <i>Culex pipiens</i> , with names of veins, cells, etc.....	Page.
	8

A CLASSIFICATION OF THE MOSQUITOES OF NORTH AND MIDDLE AMERICA.

INTRODUCTION.

In the following pages all of the subfamilies, genera, and species of mosquitoes known at the present time to occur in North and Middle America are briefly described or mentioned. In several instances, where the species have been founded chiefly upon larval characters, the adults have not been differentiated in the present work, owing to the fact that the cast larval skins were turned over to a second person before they were identified and associated with the bred adults. It was thought best, however, to publish this work in its present incomplete form, so that students might avail themselves of it at the commencement of the mosquito season. The greater number of these species were founded upon one or two specimens only, so that the range of variation in the adult stage could not be ascertained by the original describers.

During the summer of 1905 Dr. L. O. Howard examined the type specimens of several of Wiedemann's species in the Natural History Museum at Vienna, Austria, and with the aid of Dr. Anton Handlirsch, supplemented by a series of questions by the writer and a collection of named specimens for comparison, was able to gather some very important information in regard to those species which occur in North and Middle America. The museum collection was found to be in good condition, and type specimens were indicated by red labels. Following is a list of the species examined, with the results obtained by Doctor Howard:

Anopheles albimanus. The type agreed well with specimens of *Anopheles albipes* Theobald.

Anopheles crucians. The writer had correctly identified this species.

Anopheles ferruginosus. This was not a new species but simply a change of name for *Culex quinquefasciatus* of Say. It is represented in the Vienna museum by four specimens of a *Culex*; this is in perfect accord with Say's statement that the legs of this species are much shorter than those of *Anopheles punctipennis*. His other statement, namely, that it was an exceedingly numerous and troublesome species on the Mississippi River in May, considered in connection with the characters and measurements given in the descriptions of both Say and Wiedemann, seem to indicate that it can be no other than the common and widespread *Culex pipiens*.

Culex fatigans. The female has simple tarsal claws and the petiole of the first submarginal cell is about one-third as long as the cell.

Culex molestus. This is identical with *Psorophora ciliata* Fabricius.

Culex posticus. The type has the last two joints of the hind feet wholly white; *Janthinosoma musica* Say is a synonym. The *Janthinosoma posticata* of Theobald, in which the last joint of the hind feet is white, is therefore a different species, for which the writer proposes the name **terminalis**.

Culex pungens. Three specimens from New Orleans, La. The claws are apparently simple, the scales of the wings are wholly brown, and the petiole of the first submarginal cell is from one-sixth to one-fifth as long as the cell. It is evidently identical with *pipiens*.

Culex teniatus. A badly rubbed specimen of each sex from Savannah, Ga. It is synonymous with *Stegomyia calopus* Meigen.

Culex teniorhynchus. The writer had correctly identified this species.

The most important changes resulting from this critical examination of the types are that the name *albimanus* replaces *albipes*, and *posticus* takes precedence over *musica*, on account of priority in the publication of the original descriptions.

In the preparation of the present work it has been the constant aim of the writer to render it intelligible to the average student and observer by dispensing with the use of all technical terms so far as

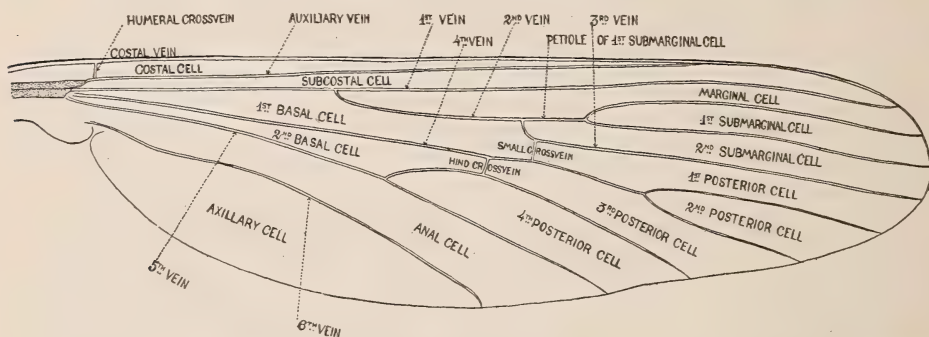


FIG. 1.—Diagram of the wing of a mosquito (*Culex pipiens*), with names of veins, cells, etc. (original).

this could be done without sacrificing either accuracy or clearness. A few terms, however, which could not be avoided, will need an explanation; these relate chiefly to the veins and cells of the wings, and it is believed that they will be made plain by reference to the accompanying illustration (fig. 1). The petiole of a cell is the last section of the vein before it forks to form the cell. The segments of the abdomen and the joints of the feet and antennæ are numbered from the point of attachment outwardly; thus, the large bulbous joint of the antennæ which is attached to the head is the first joint, the one next to it is the second, and so on. The scutellum is the semicircular piece at the posterior end of the upper part of the thorax, from which it is separated by a transverse suture. The remaining terms will no doubt be readily understood by the average reader.

In the tables of subfamilies and genera given on subsequent pages of the present work these groups are arranged in their systematic sequence, but no attempt of this kind has been made in the tables of the species. In the lists of species the synonyms are indented.

THE SUBFAMILIES OF THE CULICIDÆ.

The family Culicidæ was founded by Latreille in the year 1825. He did not consider it as representing a higher group than a tribe. Only the long-billed forms were known to him. The short-billed forms were erected into a distinct group, Corethrinæ, equivalent to a family, by the Italian naturalist Rondani in the year 1856. Schiner, in 1864, regarded the Corethrinæ as being only a subfamily of the family Culicidæ, and this view has been quite generally adopted by later writers. In the year 1883 Brauer proposed to include in this family the genus *Dixa*, which Schiner, fifteen years previously, had made the type of a new family, the Dixidæ. Dyar, in 1905, proposed to unite the Dixidæ with the Corethrinæ, the two groups to form one family, distinct from the Culicidæ.

That these three groups, the Dixidæ, Corethrinæ, and Culicinæ, are closely related to each other admits of no doubt. That the Corethrinæ are much more closely related to the Culicinæ than they are to the Dixidæ is also very evident. Thus the larva of the latter is provided with a pair of fleshy anal prolegs, a structure found in some of the Chironomidæ, but never present in any of the known larvæ of the Corethrinæ nor of the Culicinæ. In the adults the auxiliary vein in the Dixidæ ends at a point opposite the root of the second vein; in the other two groups it is prolonged nearly one-half of its entire length beyond the root of the second vein. In the Dixidæ the posterior margin of the wings is provided with hairs only; in the other two groups it is fringed with scales. Again, in the Dixidæ the antennæ are almost bare, and are similar in the two sexes; in the Culicinæ, with a single exception, and in the Corethrinæ these organs bear many long hairs, which, with few exceptions, are longer and much more numerous in the male than in the female. It will thus be seen that the Dixidæ are sufficiently distinct to be maintained as a separate family.

The radical difference in the structure of the mouth parts in the adults of the other two groups, added to the equally great difference in the food habits of the females, renders highly desirable their separation into distinct families, and we can do no better than to follow the lead of Rondani and consider that the short-billed forms constitute a family by themselves, the Corethridæ. With these forms eliminated, the family Culicidæ becomes a very homogeneous group, characterized by long, slender antennæ composed of fourteen or fifteen joints; a greatly elongated, slender proboscis; the presence of scales

on the wing veins; ten veins and subdivisions of veins which reach the margin of the wings and a vein along the posterior margin; and by the absence of a discal cell and of spurs at the apex of the inner side of the tibiæ.

In the family Culicidæ as thus restricted Theobald in the year 1901 erected the following five subfamilies: Anophelinæ, Megarhininæ, Culicinæ, Aëdeomyinæ, and Trichoprosoponinæ. The Aëdeomyinæ were separated from the Culicinæ by the much shorter palpi of the male. This appeared to be a natural division so long as there were known only forms wherein the palpi of the male in the one group are at least as long as the proboscis, while in the males of the other group they are less than one-fifth of this length; but the recent discovery of forms in which the male palpi are in one case one-third as long and in the other nearly one-half as long as the proboscis, greatly weakens the supposed importance of this difference in the relative length of the male palpi. Moreover, both as regards the larva and the structure of the tarsal claws and shape of the scales in the adults, some of the forms with short palpi in the male are much more closely related to species with long palpi in the male than they are to any of the others of the group with short palpi. These two divisions are thus seen to be unnatural and the two proposed subfamilies, namely, Culicinæ and Aëdeomyinæ, should therefore be merged into one.

In the year 1904 Lahille separated out the genus *Uranotænia* as the type of a distinct subfamily which he named Uranotæninæ, giving as its principal distinguishing character the great elongation of the petiole of the first submarginal cell and the consequent shortening of this cell; the larva has the four tufts near the middle of the head represented by stout spines which are covered with spinules. Lutz, in the same year, erected four supposed new subfamilies: Hæmagoginæ, Aëdinæ, Hyloconopinæ, and Dendromyinæ; the first of these belongs to the Culicinæ as above constituted, the second is a mixture of three subfamilies having short palpi in both sexes and the posterior end of the thorax bare, while the Hyloconopinæ and Dendromyinæ will fall as synonyms of Trichoprosoponinæ.

Very recently, in the early part of the present year (1906), Miss E. G. Mitchell erected two additional subfamilies: Psorophorinæ and Deinoceritinæ. The first was founded on the genus *Psorophora*, previously placed in the Culicinæ, but which, according to the habits of the larva, and the structure of its mouth parts, is much more closely related to the Megarhininæ. The second subfamily was founded on the genus *Deinocerites*, which differs radically from all the other members of the Culicidæ, not only in the structure of the mouth parts, particularly the mandibles, of the larvæ, but also in the antennæ of both sexes in the adults.

The following table exhibits the relationships and differences existing in the various subfamilies of the family Culicidæ at present known to occur in North and Middle America; the latter term, as employed by Jordan and Evermann in their admirable work on the fishes of this region, is intended to include Mexico, Central America, and the West Indies. There are characters in the eggs and larvæ also which support the differentiation of these subfamilies, but these are not given here, since the larvæ will be considered in another publication of this Bureau:

TABLE OF THE SUBFAMILIES.

- A. Scutellum convex behind, never distinctly three-lobed; posterior end of the thorax bare; small crossvein usually situated considerably before the root of the third vein and connected with it by a stump of a vein; claws of the female simple.
 - B. Proboscis straight or almost so; back of the head devoid of broad appressed scales, but with many narrow outstanding ones; body never with metalescent scales; first submarginal cell longer than its petiole; claws simple in both sexes.
 - 1. ANOPHELINE (p. 12)
 - BB. Proboscis strongly decurved; back of the head wholly covered with broad appressed scales, but devoid of narrow, outstanding ones; body covered with broad appressed metalescent scales; first submarginal cell less than half as long as its petiole; some of the claws of the male toothed.
 - 2. MEGARHININE (p. 14)
- AA. Scutellum distinctly three-lobed; small crossvein usually situated beyond the root of the third vein.
 - C. Posterior end of the thorax bare.
 - D. First submarginal cell at least nearly as long as its petiole; some of the claws of the male toothed; thorax never with metallic bluish scales arranged in lines or spots.
 - E. Second joint of the antennæ less than eight times as long as wide in both sexes, with many long hairs, longer and more numerous in the male.
 - F. Femora bearing many outstanding scales; wing scales narrow.
 - 3. PSOROPHORINE (p. 14)
 - FF. Femora devoid of outstanding scales ^a.
 - 4. CULICINE (p. 15)
 - EE. Second joint of the antennæ unusually long, in both sexes over fourteen times as long as wide; antennæ in both sexes with a few short hairs only.
 - 5. DEINOCERITINE (p. 26)
 - DD. First submarginal cell less than half as long as its petiole; claws simple in both sexes; thorax with metallic bluish scales which form lines or spots.
 - 6. URANOTENINE (p. 26)
 - CC. Posterior end of the thorax behind the scutellum bearing several bristles and sometimes with a few scales; claws simple in both sexes; antennæ similar in the two sexes, bearing many long hairs.
 - 7. TRICHOPROSOPONINE (p. 26)

^a Except in the genus *Aèdeomyia*, which has broad wing scales.

1. Subfamily **ANOPHELINÆ** Theobald.

TABLE OF THE GENERA.

1. Abdomen with clusters of broad, outstanding scales along the sides; outstanding scales on the veins of the wings chiefly rather broad 4
Abdomen never with such clusters of scales 2
2. Outstanding scales on the veins of the wings lanceolate, or broader, strongly tapering to their bases..... 3
Outstanding scales very narrow, linear, very slightly, if at all, tapering to their bases; feet with white bands. (Middle America.).....*Myzomyia*.
3. Veins of the wings having the outstanding scales rather narrow, lanceolate; feet wholly black.....*Anopheles*.
Veins of the wings with many broad, obovate, outstanding scales; feet with narrow, indistinct white bands at the bases of some of the joints. (Middle America.).....*Cyclopeppter*.
4. Upper side of thorax and scutellum bearing many appressed lanceolate scales; outstanding scales on the veins of the wings rather narrow, lanceolate. (Florida and southward.).....*Cellia*.
Upper side of thorax and scutellum with hairs only; many rather broad, obovate, outstanding scales on the veins of the wings. (Middle America.)
Nototricha n. gen.

Genus MYZOMYIA Blanchard.(Synonym: *Grassia* Theobald.)

Wings black-scaled and with several white-scaled patches; feet black, banded with white; thorax gray and with four black stripes. (West Indies.)

lutzi Theob.**Genus ANOPHELES** Meigen.

(a) TABLE OF THE SPECIES.

1. Wings marked with spots of dark or light-colored scales..... 2
Wings unspotted; length of the head and body about 3 mm.....*barberi* Coq.
2. Front margin of the wings with a patch of whitish scales at a point about three-fourths of the way from base to apex of the wing 5
Front margin of the wings wholly black-scaled 3
3. Sixth, or last, vein of the wings wholly black-scaled 4
Sixth vein white-scaled and with three patches of black scales*crucians* Wied.
4. Hind tibiae yellowish-white-scaled on the apical fourth; first vein of the wings with a patch of yellow scales before its middle and another on the apex. (Central America.)*eiseni* Coq.
Hind tibiae narrowly yellowish-white-scaled at the extreme apex only, first and other veins with black-scales only*maculipennis* Meig.
5. Scales of the last vein of the wings white, those at its apex black; third vein white-scaled and with two patches of black scales..... 6
Scales of the last vein white, those at each end black; third vein black-scaled, the extreme apex white-scaled.....*punctipennis* Say.
6. Fourth vein of the wings black-scaled, the apices of the forks and usually also a patch at the cross veins white-scaled*franciscanus* McC.
Fourth vein white-scaled, the forks (except their apices) and on either side of the cross veins black-scaled*pseudopunctipennis* Theob.

(b) LIST OF THE SPECIES AND SYNONYMS.

barberi Coq.	maculipennis Meig.
crucians Wied.	<i>annulimanus</i> van der Wulp. ^a
eiseni Coq.	<i>bifurcatus</i> Meigen (1804; not of Linné, 1758).
franciscanus McCracken.	<i>quadrinaculatus</i> Say.
	pseudopunctipennis Theob.
	punctipennis Say.
	<i>hyemalis</i> Fitch.

(c) UNRECOGNIZED SPECIES.

bifurcatus Linné, *nigripes* Stæger, and *walkeri* Theobald. These species are said to have unspotted wings, like *barberi*, but are larger, have yellow scales on the thorax, etc.

pictus Loew. This species, described from Asia Minor, was also recorded from North America by its author, but he evidently mistook some other species for it. No specimen of his species has been reported from this country since the time he published the statement.

quinquefasciatus Say (*ferruginosus* Wied.). This is a synonym of *Culex pipiens* L.

Genus CYCLOLEPPTERON Theobald.

Thorax with a velvety black dot near the middle of either side; feet almost unicolorous, not distinctly banded; wing scales chiefly brown or black, a patch of yellow ones at a point about two-thirds the length of the front margin and four smaller ones at the apex of the wing *grabhami* Theob.

(*C. mediopunctatus* Theob. belongs to the following genus.)

Genus NOTOTRICHA, new genus.

Thorax with a velvety black dot near the middle of either side and a larger spot in front of and extending upon the scutellum; legs brown-scaled and with many dots and narrow bands of light-colored scales *mediopunctata* Theob.

Genus CELLIA Theobald.

(Synonym: *Arribalzagia* Theobald.)

(a) TABLE OF THE SPECIES.

1. Hind feet from the middle of the second joint largely or wholly snow-white.... 2
Hind feet black, mottled with whitish and with bands of the same color at the sutures of the joints *maculipes* Theob.
2. With a black band at the base of the last joint of each hind foot. *albimanus* Wied.
Without such a band *argyritarsis* Desv.

(b) LIST OF THE SPECIES AND SYNONYMS.

albimanus Wied.	argyritarsis Desv.
<i>albipes</i> Theob.	<i>albitarsis</i> Arrib.
<i>cubersis</i> Agramonte.	maculipes Theob.
<i>tarsimaculatus</i> Goeldi.	

^a At my request Dr. C. Ritsema Cz compared specimens of *maculipennis* with the type of *annulimanus* in the Leyden Museum, and informed me that they are identical.

2. Subfamily **MEGARHININÆ** Theobald.(Synonym: *Lynchiellina* Lahille.)Genus **MEGARHINUS** Desvoidy.(Synonym: *Lynchiella* Lahille.)

(a) TABLE OF THE SPECIES.

1. Feet with a white band, at least on the hind ones; middle joint of the male palpi with many yellow scales on the outer side; hairs of the male antennæ long and dense 2
Feet wholly black on at least their upper side; palpi wholly purple-scaled; hairs of the male antennæ rather short and sparse. (West Indies.) ..*violaceus* Wied.
2. Middle and front feet wholly black.....*portoricensis* Roeder.
Middle and usually the front feet with a white band on each.....*rutilus* Coq.

(b) LIST OF THE SPECIES AND SYNONYMS.

<i>portoricensis</i> Roeder.	<i>violaceus</i> Wied.
<i>ferox</i> Walker (not of Wiedemann).	<i>purpureus</i> Theob.
<i>rutilus</i> Coq.	

(c) UNRECOGNIZED SPECIES.

grandiosus Will., *hæmorrhoidalis* Fab., and *longipes* Theob. These three species have been reported from Mexico.

3. Subfamily **PSOROPHORINÆ** Mitchell.Genus **PSOROPHORA** Desvoidy.(Synonym: *Chrysoconops* Goeldi.)

(a) TABLE OF THE SPECIES.

1. Abdomen yellow or brownish, its scales yellowish 3
Abdomen black, its scales chiefly purple; upper side of the thorax polished black, usually white-scaled toward the sides 2
2. Front and middle femora black, their scales purple except at the narrow apex of each femur, where they are white. (Middle America.).....*cilipes* Fab.
Front and other femora yellow, yellow-scaled, their broad apices black-scaled.*howardii* Coq.
3. Veins in the front half of the wings, except toward their apices, deep yellow, their scales of the same color, scales on the front half of the thorax golden yellow. (West Indies.)*fulva* Wied.
Veins and scales of the wings wholly brown, scales in the middle of the upper side of the thorax golden yellow, those toward the sides white.....*ciliata* Fab.

(b) LIST OF THE SPECIES AND SYNONYMS.

<i>ciliata</i> Fab.	<i>fulva</i> Wied.
<i>conterrens</i> Walk.	<i>flavicosta</i> Walk.
<i>molestus</i> Wied.	<i>ochripes</i> Macq.
<i>perterrans</i> Walk.	<i>howardii</i> Coq.
<i>rubidus</i> Desv.	
<i>cilipes</i> Fab.	

(c) UNRECOGNIZED SPECIES.

scintillans Walk. This species has been recorded from the West Indies.

4. Subfamily CULICINÆ Theobald.

(Synonyms: *Ædeomyiinae* Theobald, *Hæmagoginae* Lutz.)

TABLE OF THE GENERA.

1. Claws of the female toothed on at least the front and middle feet; some of the claws of the male also toothed..... 4
Claws of the female simple 2
2. Palpi of the male at least three-fourths as long as the proboscis..... 10
Palpi of the male at most only one-half as long as the proboscis. (Middle America.)..... 3
3. Head posteriorly with very narrow scales and with a patch of broad ones on each side..... 18
Head sparsely or densely covered with broad scales posteriorly..... 21
4. Scales along the sides of the upper surface of the thorax narrow, almost linear, legs never with outstanding scales..... 6
Scales along the sides of the upper surface of the thorax chiefly rather broad, obovate, hind part of the head with many similar scales scattered about.... 5
5. Legs devoid of outstanding scales..... *Lepidosia*.
Legs bearing many outstanding scales, at least on the hind feet, all feet black, the hind ones alone partly white..... *Janthinosoma*.
6. Back part of the head densely covered with broad, appressed scales except sometimes a narrow stripe in the middle..... 7
Back part of the head sparsely covered with narrow, almost linear scales and with a patch of broad ones on each side..... 8
7. Clypeus bearing several scales or hairs, scutellum with broad scales only.
Stegomyia.
Clypeus bare, scutellum with narrow scales only. (Middle America.)... *Verrallina*.
8. Wing veins having the outstanding scales narrow, lanceolate, only slightly tapering to the base 9
Wing veins having many very broad outstanding scales which taper strongly to their bases; several of the scales are hollowed out at their apices.
Lepidoplatus.
9. Palpi of the male less than one-fourth as long as the proboscis *Aedes*.
Palpi of the male about as long as the proboscis *Ochlerotatus*.
10. Head densely covered behind with broad, appressed scales, except a narrow stripe in the middle, or else the thorax has six lines of silvery scales..... 23
Head bearing narrow, almost linear appressed scales behind and with a patch of broad ones on each side; thorax never with lines of silvery scales..... 11
11. Outstanding scales on the veins behind the first one narrow and of nearly a uniform width 12
Outstanding scales on at least the apical half of the wings broad, considerably narrowed at their bases 17
12. Feet white at each end of some of the joints, or else wholly black, in which case the abdomen is wholly black-scaled, or else it has cross bands of light-colored scales..... 13
Feet white at the bases only of some of the joints, or else wholly black, in which case the abdomen is black-scaled and with the front corners of some of the segments white-scaled..... *Grabhamia*.

13. Costa of the wings not spotted 14
 Costa black-scaled and with three large spots of pale yellow scales. (Middle America.) *Lutzia*.
14. Thorax with two distinct bare stripes near the middle of the upper side; hind cross vein at least its own length from the small cross vein *Culicella*.
 Thorax without bare stripes 15
15. Scales of the wings collected into spots; hind cross vein much less than its length from the small cross vein *Theobaldia*.
 Scales of the wings uniformly distributed 16
16. Hind cross vein much less than its own length from the small cross vein. *Culiseta*.
 Hind cross vein situated at least nearly its own length from the small cross vein *Culex*.
17. Basal half of the wings having the outstanding scales of the veins narrow and almost linear; proboscis wholly black *Melanoconion*.
 Basal half of the wings having many broad, outstanding scales on the veins. 20
18. Wing veins having the outstanding scales narrow, almost linear 19
 Wing veins having the outstanding scales rather broad, oblanceolate; palpi of the male almost one-half, those of the female less than one-fifth, as long as the proboscis *Tinolestes*.
19. Palpi in both sexes about one-third as long as the proboscis *Micraëdes*.
 Palpi in both sexes less than one-fifth as long as the proboscis. *Isostomyia* n. gen.
20. The outstanding scales on the veins of the wings only moderately broad, over twice as long as broad, their apices rounded; proboscis and feet usually with light-colored bands *Teniorhynchus*.
 The outstanding scales chiefly unusually broad, their apices flat or hollowed out *Mansonia*.
21. Outstanding scales on the wing veins unusually broad; femora toward their apices bearing several elongate, outstanding scales; body devoid of blue scales. *Aèdeomyia*.
 Outstanding scales on the wing veins narrow, almost linear, legs devoid of outstanding scales, head and body chiefly blue scaled 22
22. Base of the first submarginal cell nearer to the base of the wing than is that of the second posterior cell; palpi of the male less than one-fifth as long as the proboscis, the abdomen bearing only a few hairs on the under side of the penultimate segment *Hæmagogus*.
 Base of the first submarginal cell noticeably nearer to the apex of the wing than is the base of the second posterior cell; palpi of the male about one-half as long as the proboscis; abdomen of the male with a large cluster of outstanding, blunt spines on the under side of the penultimate segment. *Cacomyia* n. gen.
23. Scutellum bearing both broad and narrow scales; head behind covered with broad appressed scales except a median stripe of rather narrow ones; outstanding scales on the wing veins narrow. (Middle America.) *Gymnometopa*.
 Scutellum with narrow scales only 24
24. Back of the head covered with broad appressed scales except a median stripe of rather narrow ones; outstanding scales on the wing veins narrow. (Middle America.) *Howardina*.
 Back of the head with narrow scales only; many rather broad, outstanding scales on the wing veins *Pneumaculex*.

Genus LEPIDOSIA Coquillett.

Our two species have the scales of the abdomen deep blue, except those of the first segment and a broad, usually interrupted band on the apices of the other segments, which are pale yellow or whitish.

- Hind feet wholly black *cyanescens* Coq.
 Hind feet black, the last joint white *mexicana* Bell.

Genus **JANTHINOSOMA** Arribalzaga.(Synonym: *Conchyliastes* Theobald.)

(a) TABLE OF THE SPECIES.

- | | |
|---|--------------------------|
| 1. Last two joints of the feet wholly white..... | 3 |
| Last joint largely or wholly black, the preceding joint chiefly white | 2 |
| 2. Scales on the upper side of the thorax yellow | <i>varipes</i> Coq. |
| Scales brown, those toward the sides yellow..... | <i>discrucians</i> Walk. |
| 3. Upper side of the thorax yellow-scaled and with a broad stripe of brown scales in the middle | <i>lutzii</i> Theob. |
| Upper side of the thorax wholly yellow-scaled..... | <i>posticata</i> Wied. |

(b) LIST OF THE SPECIES AND SYNONYMS.

discrucians Walker (not of Giles and Theobald). ^a	posticata Wiedemann (not of Theobald).
<i>arribalzagæ</i> Giles.	<i>musica</i> Say.
lutzii Theob.	<i>varipes</i> Coq.
<i>albitalarsis</i> Neveu-Lemaire (not of Theobald).	<i>johnstonii</i> Graham.
<i>discrucians</i> Giles and Theobald (not of Walker).	

(c) UNRECOGNIZED SPECIES.

terminalis Coquillett (*posticata* Theobald, not of Wiedemann), was described from St. Lucia, W. Ind., and differs from all of the other species in that the last joint only of the hind feet is white.

Genus **STEGOMYIA** Theobald.

(a) TABLE OF THE SPECIES.

Thorax marked with a pair of curved silvery stripes forming a figure which somewhat resembles a lyre; proboscis unicolorous black, feet black and with white bands at the bases of some of the joints.....*calopus* Meig.

(b) LIST OF THE SPECIES AND SYNONYMS.

<i>calopus</i> Meig.	<i>calopus</i> Meig—Continued.
<i>annulitarsis</i> Macq.	<i>konoupi</i> Brullé.
<i>bancroftii</i> Skuse.	<i>luciensis</i> Theob.
<i>elegans</i> Ficalbi.	<i>mosquito</i> Desv.
<i>exagitans</i> Walk.	<i>queenslandensis</i> Theob.
<i>excitans</i> Walk.	<i>rossii</i> Giles.
<i>fasciata</i> Fab.	<i>tæniatus</i> Wied.
<i>formosa</i> Walk.	<i>toxorhynchus</i> Macq.
<i>frater</i> Desv.	<i>viridifrons</i> Walk.
<i>impatibilis</i> Walk.	<i>zonatipes</i> Walk.
<i>inexorabilis</i> Walk.	

(*S. sexlineata* Theob. belongs to the genus *Gymnometopa*.)

Genus **VERRALLINA** Theobald.

- | | |
|--|------------------------|
| Upper side of the thorax black-scaled, the sides in front of the wings white-scaled. | <i>insolita</i> Coq. |
| Upper side of the thorax wholly whitish-scaled | <i>laternaria</i> Coq. |

^a The form referred to this species by these two authors has the entire apex of the hind feet wholly white, whereas in his original description Walker expressly states, both in the Latin diagnosis and in the English description, that there is only a sub-apical white band in *discrucians*, the remainder of the feet being purple.

Genus **LEPIDOPLATYS** Coquillett.

(a) TABLE OF THE SPECIES.

Scales of the wings mixed brown and white; feet with broad white bands at the bases of some of the joints, tibiae not distinctly banded *squamiger* Coq.

(b) LIST OF THE SPECIES AND SYNONYMY.

squamiger Coq.

deniedmannii Ludlow.

Genus **AËDES** Wiedemann.^a

Upper side of the thorax golden-yellow scaled; abdomen black-scaled and with a band of yellow scales at the bases of the segments; feet unicolorous black.

fuscus O. S.

(*A. smithii* belongs to *Wyeomyia*.)

Genus **OCHLEROTATUS** Arribalzaga.

(Synonyms: *Culicada* Felt, *Culicelsa* Felt, *Ecculex* Felt, *Protoculex* Felt, *Pseudoculex* Dyar.)

(a) TABLE OF THE SPECIES.

1. Ground color of the thorax bright yellow; the scales and bristles of the head and thorax wholly yellow 2
- Ground color of the thorax brown or black 3
2. With an ovate black spot above the insertion of each wing; feet not distinctly two-colored, claws of the hind ones simple *bimaculatus* Coq.
- Without such a spot; feet dark colored and with white bands at the bases of some of the joints. (Middle America.) *knabi* Coq.
3. Feet dark colored and with white bands 19
- Feet not distinctly banded, proboscis unbanded 4
4. Scales of the abdomen black, sometimes a crossband or pair of spots of light-colored scales on some or all of the segments 5
- Scales of the abdomen yellow, except a pair of spots of black ones on some of the segments; claws toothed on all of the feet in the female... *spenceri* Theob.
5. Light-colored scales of the abdomen forming crossbands situated at the bases of the segments 6
- Light-colored scales, when present, forming spots on the sides of some of the segments 14
6. Upper side of the thorax yellow-scaled and with three stripes of brown scales; scales of the wings wholly brown; all the claws of the female toothed. *trivittatus* Coq.
- Upper side of the thorax not marked like this 7
7. Thorax with a brown-scaled stripe along the sides and with a wider space of white scales in the middle; scales of the wings wholly brown; all of the claws toothed in the female *dupreei* Coq.
- Thorax not marked in this manner 8
8. Sides broadly and the front end of the thorax whitish-scaled; back part of the head also whitish-scaled; all claws toothed in the female 9
- Sides and front end of the thorax yellow or brown scaled 10
9. Middle of the thorax with a broad stripe of brown scales *pretans* Grossb.
- Middle of the thorax having the scales yellow and whitish... *cinereoborealis* Felt.

^aThis genus has commonly been credited to Meigen, but he expressly states that he had not seen a specimen and that both the name and description had been furnished to him by Wiedemann.

10. The scales in the middle of the thorax as dark as, or darker than, those along the side..... 11
The scales in the middle of the thorax yellow, those along the broad sides brown; claws of the hind feet simple in the female.....*bracteatus* Coq.
11. Bristles of the scutellum yellow..... 12
Bristles of the scutellum chiefly black; upper side of the thorax golden-yellow-scaled and devoid of stripes of darker scales, although two darker stripes sometimes appear where the scales are very sparse, each stripe being scarcely one-half as wide as the yellow-scaled space between it and the other stripe.
pullatus Coq.
12. In the middle of the thorax the scales are wholly yellow..... 13
In the middle of the thorax is a pair of brown-scaled stripes, each stripe being slightly wider than the yellow-scaled space between it and the other stripe.
lazarensis F. & Y.
13. Claspers of the male with a long, stout spine near the base of the inner side.
impiger Walk.
Claspers without such a spine*abserratus* Felt.
14. With a median stripe of scales on the thorax of a different color from those along the sides 15
Without such a stripe; abdomen black-scaled and with the front angles of some of the segments white-scaled; claws on all of the feet of the female toothed.
(Middle America.)*nubilus* Theob.
15. Scales in the middle of the thorax, at least on its anterior half, white, the remainder brown; claws on all of the feet of the female toothed 16
Scales in the middle of the thorax black, the remainder yellow or whitish ... 18
16. Stripe of white scales in the middle of the thorax extending entirely across the latter 17
Stripe of white scales confined to the anterior two-thirds of the thorax.
confirmatus Arrib.
17. White-scaled stripe of the thorax much narrower than the brown-scaled portion on each side of it*serratus* Theob.
White-scaled stripe wider than the brown-scaled portion on each side of it.
dupreei Coq.
18. Upper surface of the thorax white-scaled toward the sides; claws on the hind feet of the female simple.....*triseriatus* Say.
Upper surface of the thorax golden-yellow-scaled toward the sides; claws on the hind feet of the female toothed*aurifer* Coq.
19. Proboscis blackish and with a white band near the middle; white bands of the feet confined to the bases of the joints, except on the hind feet, the last joint of which is sometimes wholly white..... 20
Proboscis blackish, not distinctly banded near the middle..... 22
20. Abdomen black-scaled, each segment with a basal band and median longitudinal stripe of yellowish scales, and with a white-scaled spot in the middle of each side 21
Abdomen black-scaled, each segment with a band at the base and a spot in the middle of each side white-scaled, wing scales wholly black..*teniorhynchus* Wied.
21. Wing scales mixed black and yellowish; light colored scales of the legs yellow, usually a whitish band in the middle of the first joint of the feet..*sollicitans* Walk.
Wing scales wholly black; light colored scales of the legs pure white, first joint of the feet never with a light colored band in the middle.....*mitchellæ* Dyar.
22. Joints of the feet having the white bands situated at both ends of some of them, last joint of the hind feet white..... 23
Joints of the feet having the white bands situated at the bases only of some of them, last joint of the hind feet black except sometimes its extreme base.. 28

23. Black scales mixed with white ones on the wings; abdomen whitish or yellow-scaled and with a pair of black-scaled spots on some of the segments..... 24
 Black scales only on the wings, abdomen black-scaled, sometimes with a band of white scales at the bases of the segments..... 25
24. Stripe of scales in the middle of the thorax deep golden brown, covering more than one-fifth of the width of the thorax, its borders well defined. (Salt water species.)..... *lativittatus* Coq.
 Stripe pale brown, covering less than one-ninth of the width of the thorax, its borders not strongly marked, usually a narrow stripe of brown scales on each side of it separated by yellowish white scales. (Fresh water species.)
curriei Coq.
25. Upper side of the thorax light-yellow-scaled and with a broad stripe of black scales in the middle; palpi wholly black-scaled in both sexes; abdomen black-scaled and with a band of white scales at the base of each segment.
atropalpus Coq.
 Upper side of the thorax not marked as above; palpi with whitish scales at the apices in the female and with bands of them in the male 26
26. Segments of the abdomen with distinct whitish bands at their bases; scales of the upper side of the thorax brown and light yellowish *varipalpus* Coq.
 Segments of the abdomen never with distinct whitish bands; scales of the upper side of the thorax wholly yellow 27
27. Hind feet almost wholly white-scaled..... *nivittarsis* Coq.
 Hind feet largely black-scaled..... *canadensis* Theob.
28. Dorsum of the abdomen black-scaled and with a band of light-colored scales at the base of each segment 30
 Dorsum of the abdomen not marked as above 29
29. Abdomen wholly light-yellow-scaled *fletcheri* Coq.
 Abdomen black-scaled and with white spots on the sides; thorax black-scaled and with four lines of yellow scales. (Middle America.)... *quadrivittatus* Coq.
30. White band at the base of the second joint of the hind feet covering at least one-third of the length of the joint; claws of the hind feet toothed in the female... 32
 White band covering less than one-fourth of the length of the second joint of the hind feet..... 31
31. Seventh segment of the abdomen almost wholly yellow-scaled, many yellow scales in the central portion of the preceding segment; claws of the hind feet of the female simple *cantator* Coq.
 Seventh and preceding segments chiefly black-scaled; claws of the hind feet of the female toothed..... *sylvestris* Theob.
32. Claspers of the male having, near the base of the inner side, a large process thickly covered with hairs *fitchii* Felt.
 Claspers without such a process *subcantans* Felt, *abfitchii* Felt, *vittata* Theob.

(b) LIST OF THE SPECIES AND SYNONYMS.

abfitchii Felt.
siphonalis Grossb.
abserratus F. & Y.
atropalpus Coq.
aurifer Coq.
bimaculatus Coq.

bracteatus Coq.
cantator Coq.
canadensis Theob.
cinereoborealis F. & Y.^a
trichurus Dyar.

^aThe writer's copy of Science containing the original description of this species was received September 2, 1904, and the National Museum copy is stamped as having been received on the same date. The writer's copy of the Journal of the New York Entomological Society which contains the original description of *trichurus* was received September 6, 1904; the National Museum copy and that of the U. S. Department of Agriculture are stamped with the same date—September 6, 1904.

(b) LIST OF THE SPECIES AND SYNONYMS.

confinis Arrib.	ocellatus Theob.
discolor Coq.	pygmaeus Theob.
imitator Theob.	<i>antiquæ</i> Giles.
jamaicensis Theob.	<i>nanus</i> Coq.
<i>confinis</i> auct. (all references to its occurrence	scholasticus Theob.
in the United States).	signipennis Coq.

(*G. deniedmannii* Ludlow belongs to *Lepidoplatys*.)

Genus LUTZIA Theobald.

Joints of the feet white at each end, abdomen black-scaled and with a large apical spot of white scales on each segment.....*bigotii* Bell.

Genus CULICELLA Felt.

(a) TABLE OF THE SPECIES.

Feet narrowly white at the bases of some of the joints, proboscis without a lighter band near the middle, abdomen black-scaled and with a broad band of yellow scales at the base of each segment.....*dyari* Coq.

(b) LIST OF THE SPECIES AND SYNONYMY.

dyari Coq.
 brittoni Felt.

Genus THEOBALDIA Neveu-Lemaire.

(a) TABLE OF THE SPECIES.

Front side of the hind tibiæ chiefly black-scaled, the apices very broadly whitish-scaled, white bands of the feet narrow, the dark spots on the wings large.

incidens Thom.

Front side of the hind tibiæ with many yellow scales, the apices narrowly and indistinctly whitish-scaled; the dark spots on the wings small*annulata* Schrank.

(b) LIST OF THE SPECIES AND SYNONYMS.

annulata Schrank.	incidens Thom.
<i>affinis</i> Stephens.	<i>particeps</i> Adams.
<i>variegata</i> Schrank.	

Genus CULISETA Felt.

(a) TABLE OF THE SPECIES.

Wing scales wholly brown, abdomen brown-scaled and with bands of light-colored scales at the bases of the segments in both sexes*absobrinus* Felt.

Wing scales mixed brown and yellowish in the female, abdomen brown-scaled and with bands of light-colored scales in the female, unbanded in the male.

consobrinus Desv.

(b) LIST OF THE SPECIES AND SYNONYMS.

absobrinus Felt.	<i>inornatus</i> Will.
consobrinus Desv.	<i>magnipennis</i> Felt.
<i>impatiens</i> Walk.	<i>pinguis</i> Walk.

Genus *CULEX* Linné.(Synonyms: *Heteronycha* Arribalzaga, *Neoculex* Dyar.)

(a) TABLE OF THE SPECIES.

1. Feet black, both ends of some of the joints white.
janitor Theob., *pleuristriatus* Theob., *secutor* Theob., *tarsalis* Coq.
Feet uniformly blackish 2
2. Light-colored bands of scales on the abdomen situated at the bases of the segments 3
Light-colored bands located at the apices of the segments, sometimes almost wanting *territans* Walk.
3. Upper side of the thorax dark-yellow-scaled, and usually with a small round dot of light-yellow scales on each side of the center; light-colored bands of the abdomen broad and distinct; feet with very narrow, indistinct bands of light-colored scales at the sutures of the joints *restuans* Theob.
Upper side of the thorax devoid of such dots 4
4. Crossbands of light-colored scales indistinct on the anterior half of the abdomen, almost wanting on the second segment *salinarius* Coq.
Crossbands distinct 5
5. Species from the West Indies *palus* Theob.; *similis* Theob.
Species almost cosmopolitan *pipiens* Linné.

(b) LIST OF THE SPECIES AND SYNONYMS.

<i>janitor</i> Theob.	<i>salinarius</i> Coq.
<i>palus</i> Theob.	<i>nigritulus</i> auct. (North American references).
<i>pipiens</i> Linne.	<i>secutor</i> Theob.
<i>boscii</i> Desv.	<i>similis</i> Theob.
<i>cubensis</i> Bigot.	<i>tarsalis</i> Coq.
<i>fatigans</i> auct. ^a (North American references).	<i>affinis</i> Adams (not of Stephens).
<i>ferruginosus</i> Wied. (<i>Anopheles</i> .)	<i>kelloggii</i> Theob.
<i>pungens</i> Wied.	<i>peus</i> Speiser.
<i>quinquefasciatus</i> Say.	<i>willistoni</i> Giles.
<i>pleuristriatus</i> Theob.	<i>territans</i> Walk.
<i>restuans</i> Theob.	<i>apicalis</i> Adams.

(c) UNRECOGNIZED SPECIES.

flavipes Macquart, *biocellatus* Theobald, *inflictus* Theob., *microsquamosus* Theob., *nigripalpus* Theob., and *saxatilis* Grossbeck.

(*C. penafielii* Williston has never been described.)

Genus *MELANOCONION* Theobald.

1. Hind and other feet wholly black 2
Hind feet white-scaled on the broad base of the fourth joint; abdomen black-scaled, a row of violet-scaled spots along the sides. (Middle America.)
urichii Coq.

^a In response to my request, Maj. A. Alcock, superintendent of the natural history section of the Indian Museum at Calcutta, India, sent me specimens of this species in all the stages. The larvæ have been examined by Dr. H. G. Dyar and Mr. F. Knab, who report having discovered differences between them and the corresponding stage of the North American specimens of *pipiens*.

(b) UNRECOGNIZED SPECIES.

niger Giles, described from Antigua, West Indies.

richardi Ficalbi, a European species reported from Canada by Theobald.

(c) SPECIES WRONGLY REFERRED TO THIS GENUS.

antique Giles and *confinis* Arribalzaga belong to *Grabhamia*; *fulvus* Wiedemann belongs to *Psorophora*; *sierrensis* Ludlow belongs to *Ochlerotatus*.

Genus **MANSONIA** Blanchard.

(Synonym: *Panoplites* Theobald.)

(a) TABLE OF THE SPECIES.

Third joint of the feet black-scaled, the base narrowly white-scaled, scales of the tibiæ not forming distinct spots or bands.....*titillans* Walk.
Third joint of the hind feet wholly white-scaled, black and yellowish scales of the tibiæ collected into distinct bands and spots.....*fascipes* Coq.

(b) LIST OF THE SPECIES AND SYNONYMY.

fascipes Coq. | *titillans* Walk.
teniorhynchus Arrib. (not of Wiedemann).

Genus **ÆDEOMYIA** Theobald.

Proboscis with a white ring near the middle; joints of the feet white at their bases; scales of the wings brown, yellow, and white.....*squamipennis* Arrib.

Genus **HÆMAGOGUS** Williston.

(a) TABLE OF THE SPECIES.

Scales of the abdomen bluish and with a row of silvery spots along each side, sometimes a small median spot of white scales on some of the segments....*cyaneus* Fab.

(b) LIST OF THE SPECIES AND SYNONYMY.

cyaneus Fab.
splendens Will.

(The following two species were originally described under *Hæmagogus*.)

Genus **CACOMYIA**, new genus.

Abdomen having white scales in the middle of the last two segments only.
albomaculatus Theob.
Abdomen having white scales in the middle of some of the other segments.
equinus Theob.

Genus **GYMNOMETOPA** Coquillett.

- Upper side of the thorax brown-scaled and with six narrow lines of pale yellow scales extending the entire length of the thorax; last two joints of the hind feet black.
sexlineata Theob.
Upper side of the thorax not marked like this..... 2
- Last two joints of the hind feet and all the tibiæ black..... 3
Last two joints of the hind feet chiefly white; a spot or band of white scales on the base of at least the first two joints on all of the feet; tibiæ with a silvery mark at a point about one-fourth of their length.....*mediovitata* Coq.
- With a dot of silvery scales in the middle of the front end of the thorax; first two joints of the front feet white-scaled at their bases*albonotata* Coq.
Without such a dot; front feet wholly black-scaled.....*busckii* Coq.

Genus **HOWARDINA** Theobald.

Feet black-scaled, the base of the first three joints of the hind ones white-scaled; upper side of the thorax white-scaled along the sides, the median portion black-scaled and with four narrow lines of pale yellow scales, the two middle lines united into a single line posteriorly, the outer two lines situated on the posterior half of the thorax.....*walkeri* Theob.

Genus **PNEUMACULEX** Dyar.

Thorax on the upper side velvety-brown-scaled and with six narrow lines of silvery scales*signifer* Coq.

5. Subfamily **DEINOCERITINÆ** Mitchell.Genus **DEINOCERITES** Theobald.

(Synonym: *Brachiomysia* Theobald.)

(a) TABLE OF THE SPECIES.

Proboscis and feet unicolorous blackish; scales of the upper side of the body also blackish*cancer* Theob.

(b) LIST OF THE SPECIES AND SYNONYMY.

cancer Theob.

magna Theob.

6. Subfamily **URANOTÆNIINÆ** Lahille.Genus **URANOTÆNIA** Arribalzaga.

(a) TABLE OF THE SPECIES.

1. Thorax with a median line of bluish scales; feet wholly black..... 2
 Thorax without a median line; hind feet white on at least the last two joints and broad apex of the third 3
2. Bluish median line of the thorax prolonged to the scutellum.....*sapphirina* O. S.
 Bluish line obliterated before reaching the scutellum.....*socialis* Theob.
3. Scutellum with blue scales; a patch of blue scales on the thorax a considerable distance in front of the scutellum; feet white at the sutures of many of the joints. (Middle America.)*geometrica* Theob.
 Scutellum without blue scales; no patch of blue scales on the thorax in front of it; feet wholly black except the last two joints and apex of the third in the hind ones.....*lowii* Theob.

(b) UNRECOGNIZED SPECIES.

apicalis Theobald and *pulcherrima* Arribalzaga. Both of these have been reported from the West Indies.

7. Subfamily **TRICHOPROSOPONINÆ** Theobald.

(Synonyms: *Hyloconopinæ* Lutz, *Dendromyjinæ* Lutz, *Sabettinæ* Blanchard.)

TABLE OF THE GENERA.

1. Male palpi at least one-half as long as the proboscis; clypeus hairy. (Middle America.)*Trichoprosopon*.
 Male palpi less than one-fourth as long as the proboscis; clypeus bare 2

2. Veins of the wings having the outstanding scales narrow and nearly linear; hind cross vein situated at least its own length before the small cross vein; legs never fringed with scales..... *Wyeomyia*.
Veins having many rather broad outstanding scales. (Middle America.)..... 3
3. Hind cross vein slightly before, opposite, or beyond the small cross vein, each foot bearing two claws 7
Hind cross vein at least twice its own length before the small cross vein; legs never fringed with scales..... 4
4. With two claws on each hind foot; no scales on the posterior end of the thorax below the scutellum 5
With only one claw on each hind foot in both sexes; posterior end of the thorax below the scutellum bearing several broad scales in addition to the bristles.. 6
5. Proboscis shorter than the body, thickened before its apex *Dendromyia*.
Proboscis longer than the body, not thickened toward its apex..... *Phoniomyia*.
6. Male proboscis strongly curved in the outer half and with a cluster of scales at each end of the curved portion *Limatus*.
7. Legs not fringed *Sabethoides*.
Legs fringed in places with outstanding scales in both sexes *Sabethes*.

Genus TRICHOPROSOPON Theobald.(Synonym: *Joblotia* Blanchard.)

- Feet wholly black..... *lunata* Theob.
Feet black, the last four joints of the middle feet and the last two of the hind ones white *nivipes* Theob.

Genus WYEOMYIA Theobald.

- Proboscis and upper side of the abdomen wholly black-scaled.
grayi Theob., *pertinans* Will., *smithii* Coq.

Genus DENDROMYIA Theobald.

- Abdomen wholly black-scaled on the upper side; humeri black-scaled; first joint of the hind feet shorter than their tibiae..... *luteoventralis* Theob.

Genus PHONIOMYIA Theobald.

(a) TABLE OF THE SPECIES.

- Abdomen black-scaled, the front angles of the segments white-scaled.
longirostris Theob.

(b) LIST OF THE SPECIES AND SYNONYMY.

- longirostris* Theob.
trinidadensis Theob.

Genus LIMATUS Theobald.(Synonym: *Simondella* Laveran.)

- Thorax golden-yellow-scaled, a median, Y-shaped spot, with the prongs nearest the head, and a large spot above each wing violet-blue-scaled..... *durhamii* Theob.

Genus SABETHOIDES Theobald.

- Abdomen black-scaled, the under side and front angles of the segments whitish-scaled, the white-scaled front angles prolonged so as to form a crossband which is interrupted except sometimes on the last three segments *confusus* Theob.
Abdomen black-scaled, the under side whitish-scaled, and encroaching on the sides of the dorsum, the border of the two colors strongly undulating *undulosus* Coq.

Genus **SABETHES** Desvoidy.

(a) TABLE OF THE SPECIES.

- | | |
|---|-----------------------|
| 1. Front and hind legs not fringed | 2 |
| Front and other legs fringed in places with outstanding scales; middle legs white-scaled before and beyond the fringed portion; the broad apices of the hind feet chiefly white-scaled..... | <i>longipes</i> Fab. |
| 2. Legs black-scaled, the apical part of the fringe on the middle legs white. | <i>nitidus</i> Theob. |
| Legs wholly black-scaled | <i>locuples</i> Desv. |

(b) LIST OF THE SPECIES AND SYNONYMY.

<i>locuples</i> Desv.	<i>longipes</i> Fab.
<i>remipes</i> Wied.	<i>nitidus</i> Theob.

INDEX.

	Page.
abfitchii, Ochlerotatus.....	20
abserratus, Ochlerotatus.....	19
absobrinus, Culiseta.....	22
Aædeomyia.....	16, 25
ÆDEOMYINÆ.....	10, 15
Ædes.....	15, 18
ÆDINÆ.....	10
æstivalis, Ochlerotatus.....	21
affinis, Culex.....	23
affinis, Theobaldia.....	22
albimanus, Cellia.....	7, 13
albipes, Cellia.....	7, 13
albitarsis, Cellia.....	13
albitarsis, Janthinosoma.....	17
albomaculatus, Cacomyia.....	25
albonotata, Gymnometopa.....	25
annulatus, Theobaldia.....	22
annulimanus, Anopheles.....	13
annulitarsis, Stegomyia.....	17
Anopheles.....	12
ANOPHELINÆ.....	10, 11, 12
antiquæ, Grabhamia.....	22
apicalis, Culex.....	23
apicalis, Uranotania.....	26
argyrotarsis, Cellia.....	13
arribalzagæ, Janthinosoma.....	17
arribalzagæ, Tæniorhynchus.....	24
Arribalzagia.....	13
atratus, Melanoconion.....	24
atropalpus, Ochlerotatus.....	20
aurifer, Ochlerotatus.....	19
auroides, Ochlerotatus.....	21
bancroftii, Stegomyia.....	17
barberi, Anopheles.....	12
bifurcatus, Anopheles.....	13
bigotii, Lutzia.....	22
bimaculatus, Ochlerotatus.....	18
biocellatus, Culex.....	23
bisulcatus, Micraëde.....	24
boscii, Culex.....	23
Brachiomyia.....	26
bracteatus, Ochlerotatus.....	19
brittoni, Culicella.....	22
busekii, Gymnometopa.....	25
Cacomyia.....	16, 25
calopus, Stegomyia.....	8, 17
canadensis, Ochlerotatus.....	20
cancer, Deinocerites.....	26
cantator, Ochlerotatus.....	20
Cellia.....	12, 13
Chrysoconops.....	14
ciliata, Psorophora.....	8, 14

	Page.
cilipes, Psorophora.....	14
cinereoborealis, Ochlerotatus.....	18
Conchyliastes.....	17
confinis, Grabhamia.....	21, 22
confirmatus, Ochlerotatus.....	19
confusus, Sabethoides.....	27
consobrinus, Culiseta.....	22
conterrens, Psorophora.....	14
Coquillettida.....	24
CORETHRIDÆ.....	9
crucians, Anopheles.....	7, 12
cubensis, Cellia.....	13
cubensis, Culex.....	23
Culex.....	16, 23
Culicada.....	18
Culicella.....	16, 22
Culicelsa.....	18
CULICIDÆ.....	9
CULICINÆ.....	10, 15
Culiseta.....	16, 22
curriei, Ochlerotatus.....	20
cyanescens, Lepidosia.....	16
cyaneus, Hæmagogus.....	25
Cycloleppterion.....	12, 13
damnosus, Ochlerotatus.....	21
Deinocerites.....	26
DEINOCERITINÆ.....	10, 11, 26
Dendromyia.....	27
DENDROMYINÆ.....	10, 26
deniedmannii, Lepidoplatus.....	18
discolor, Grabhamia.....	21
disrucians, Janthinosoma.....	17
DIXIDÆ.....	9
dupreei, Ochlerotatus.....	18, 19
durhamii, Limatus.....	27
dyari, Culicella.....	22
Ecculex.....	18
eiseni, Anopheles.....	12
elegans, Stegomyia.....	17
equinus, Cacomyia.....	25
exagitans, Stegomyia.....	17
excitans, Stegomyia.....	17
exerucians, Ochlerotatus.....	21
fasciata, Stegomyia.....	17
fasciolatus, Tæniorhynchus.....	24
fascipes, Mansonia.....	25
fatigans, Culex.....	8, 23
Feltidia.....	21
ferox, Megarhinus.....	14
ferruginosus, Culex.....	7, 23
Finlaya.....	21
fitchii, Ochlerotatus.....	20

	Page.		Page.
flaveolus, <i>Tæniorhynchus</i>	24	Lynchiella	14
flavicosta, <i>Psorophora</i>	14	LYNCHIELLINE.....	14
flavipes, <i>Culex</i>	23	maculipennis, <i>Anopheles</i>	12
fletcheri, <i>Ochlerotatus</i>	20	maculipes, <i>Cellia</i>	13
formosa, <i>Stegomyia</i>	17	magna, <i>Deinocerites</i>	26
franciscanus, <i>Anopheles</i>	12	magnipennis, <i>Culiseta</i>	22
frater, <i>Stegomyia</i>	17	Mansonella.....	16, 25
fulva, <i>Psorophora</i>	14	mathisi, <i>Ochlerotatus</i>	21
fuscus, <i>Aedes</i>	18	mediopunctata, <i>Nototricha</i>	13
geometrica, <i>Uranotænia</i>	26	mediovittata, <i>Gymnometopa</i>	25
Grabhamia	15, 21	MEGARHININÆ.....	10, 11, 14
grabhami, <i>Cyclolepteron</i>	13	Megarhinus	14
grandiosus, <i>Megarhinus</i>	14	Melanoconion	16, 23
Grassia	12	melanurus, <i>Melanoconion</i>	24
grayii, <i>Wyeomyia</i>	27	mexicana, <i>Lepidosia</i>	16
Gymnometopa.....	16, 25	Micraëdes	16, 24
Hæmagogus	16, 25	microsquamosus, <i>Culex</i>	23
HEMAGOGINÆ.....	10, 15	mitchellæ, <i>Ochlerotatus</i>	19
hæmorrhoidalis, <i>Megarhinus</i>	14	molestus, <i>Psorophora</i>	8
Heteronychia	23	mosquito, <i>Stegomyia</i>	17
hirsuteron, <i>Ochlerotatus</i>	21	musica, <i>Janthinosoma</i>	8, 17
howardii, <i>Psorophora</i>	14	Myzomyia	12
Howardina	16, 26	nanus, <i>Grabhamia</i>	22
humilis, <i>Melanoconion</i>	24	nemorosus, <i>Ochlerotatus</i>	21
hyemalis, <i>Anopheles</i>	13	Neoculex	23
HYLOCONOPINÆ.....	10, 26	niger, <i>Tæniorhynchus</i>	25
idahoensis, <i>Ochlerotatus</i>	21	nigra, <i>Ochlerotatus</i>	21
imitator, <i>Grabhamia</i>	21	nigricans, <i>Tæniorhynchus</i>	24
impatibilis, <i>Stegomyia</i>	17	nigricarpus, <i>Isotomyia</i>	24
impatiens, <i>Culiseta</i>	22	nigripalpus, <i>Culex</i>	23
impiger, <i>Ochlerotatus</i>	19	nigripes, <i>Anopheles</i>	13
implacabilis, <i>Ochlerotatus</i>	21	nigritulus, <i>Culex</i>	23
incidens, <i>Theobaldia</i>	22	nitidus, <i>Sabethes</i>	28
inconspicuus, <i>Ochlerotatus</i>	21	nivipes, <i>Trichoprosopon</i>	27
indecorabilis, <i>Melanoconion</i>	24	nivitsarsis, <i>Ochlerotatus</i>	20
inexorabilis, <i>Stegomyia</i>	17	Nototricha	12, 13
inflictus, <i>Culex</i>	23	nubilus, <i>Ochlerotatus</i>	19
inornatus, <i>Culiseta</i>	22	ocellatus, <i>Grabhamia</i>	21
insolita, <i>Verrallina</i>	17	Ochlerotatus	15, 18
Isotomyia.....	16, 24	ochripes, <i>Psorophora</i>	14
jamaicensis, <i>Grabhamia</i>	21	onondagensis, <i>Ochlerotatus</i>	21
janitor, <i>Culex</i>	23	palliatu, <i>Tæniorhynchus</i>	24
Janthinosoma	15, 17	pallidohirta, <i>Ochlerotatus</i>	21
Joblotia	27	palus, <i>Culex</i>	23
johnstoni, <i>Janthinosoma</i>	17	Panoplites	25
kelloggii, <i>Culex</i>	23	particeps, <i>Theobaldia</i>	22
knabi, <i>Ochlerotatus</i>	18	penafiel, <i>Culex</i>	23
konoupi, <i>Stegomyia</i>	17	perterrens, <i>Psorophora</i>	14
laternaria, <i>Verrallina</i>	17	pertinans, <i>Wyeomyia</i>	27
latisquama, <i>Tinolestes</i>	24	perturbans, <i>Isotomyia</i>	24
lativittatus, <i>Ochlerotatus</i>	20	perturbans, <i>Tæniorhynchus</i>	24
lazarensis, <i>Ochlerotatus</i>	19	peus, <i>Culex</i>	23
Lepidoplatys	15, 18	Phoniomyia	27
Lepidosia.....	15, 16	pictus, <i>Anopheles</i>	13
Limatus	27	pinguis, <i>Culiseta</i>	22
locuples, <i>Sabethes</i>	28	pipiens, <i>Culex</i>	7, 8, 23
longipes, <i>Megarhinus</i>	14	pleuristriatus, <i>Culex</i>	23
longipes, <i>Sabethes</i>	28	Pneumaculex	16, 26
longirostris, <i>Phoniomyia</i>	27	portoricensis, <i>Megarhinus</i>	14
lowii, <i>Uranotænia</i>	26	portoricensis, <i>Ochlerotatus</i>	21
luciensis, <i>Stegomyia</i>	17	posticata, <i>Janthinosoma</i>	8, 17
lunata, <i>Trichoprosopon</i>	27	pretans, <i>Ochlerotatus</i>	18
luteoventralis, <i>Dendromyia</i>	27	Protoculex	18
Lutzia	16, 22	provocans, <i>Ochlerotatus</i>	21
lutzii, <i>Janthinosoma</i>	17	Pseudoculex	18
lutzii, <i>Myzomyia</i>	12	pseudopunctipennis, <i>Anopheles</i>	12

	Page.		Page.
Psorophora	14	squamiger, <i>Lepidoplatus</i>	18
PSOROPHORINÆ	10, 11, 14	squamipennis, <i>Ædeomyia</i>	25
pulcherrima, <i>Uranotenia</i>	26	Stegomyia	15, 17
pullatus, <i>Ochlerotatus</i>	19	stimulans, <i>Ochlerotatus</i>	21
punctipennis, <i>Anopheles</i>	12	subcantans, <i>Ochlerotatus</i>	20
punctor, <i>Ochlerotatus</i>	21	sylvestris, <i>Ochlerotatus</i>	20
pungens, <i>Culex</i>	8, 23	tæniatus, <i>Stegomyia</i>	8, 17
purpureus, <i>Megarhinus</i>	14	Tæniorhynchus	16, 24
pygmæa, <i>Grabhamia</i>	21	tæniorhynchus, <i>Mansonia</i>	25
quadrifasciatus, <i>Anopheles</i>	13	tæniorhynchus, <i>Ochlerotatus</i>	8, 19
quadrivittatus, <i>Ochlerotatus</i>	20	tarsalis, <i>Culex</i>	23
queenslandensis, <i>Stegomyia</i>	17	tarsimaculatus, <i>Cellia</i>	13
quinquefasciatus, <i>Culex</i>	7, 23	terminalis, <i>Janthinosoma</i>	8, 17
remipes, <i>Sabethes</i>	28	terrilians, <i>Culex</i>	23
reptans, <i>Ochlerotatus</i>	21	testaceus, <i>Ochlerotatus</i>	21
restuans, <i>Culex</i>	23	Theobaldia	16, 22
richardi, Tæniorhynchus	25	Tinolestes	16, 24
rossii, <i>Stegomyia</i>	17	titillans, <i>Mansonia</i>	25
rubidus, <i>Psorophora</i>	14	tortilis, <i>Ochlerotatus</i>	21
rutilus, <i>Megarhinus</i>	14	toxorhynchus, <i>Stegomyia</i>	17
Sabethes	27, 28	Trichoprosopon	26, 27
Sabethoides	27	TRICHOPROSOPONINÆ	10, 11, 26
SABETTINÆ	26	trichurus, <i>Ochlerotatus</i>	20
salinarius, <i>Culex</i>	23	trinidadensis, <i>Phoniomyia</i>	27
sapphirina, <i>Uranotenia</i>	26	triseriatus, <i>Ochlerotatus</i>	19
saxatilis, <i>Culex</i>	23	trivittatus, <i>Ochlerotatus</i>	18
scholasticus, <i>Grabhamia</i>	21	undosus, <i>Sabethoides</i>	27
scintillans, <i>Psorophora</i>	15	Uranotenia	26
secutor, <i>Culex</i>	23	URANOTENINÆ	10, 11, 26
serratus, <i>Ochlerotatus</i>	19	urichii, <i>Melanoconion</i>	23
sexlineata, <i>Gymnotetopa</i>	25	variegata, <i>Theobaldia</i>	22
sierrensis, <i>Ochlerotatus</i>	21	varipalpus, <i>Ochlerotatus</i>	20
signifer, <i>Pneumaculex</i>	26	varipes, <i>Janthinosoma</i>	17
signipennis, <i>Grabhamia</i>	21	Verrallina	15, 17
similis, <i>Culex</i>	23	violaceus, <i>Megarhinus</i>	14
Simondella	27	viridifrons, <i>Stegomyia</i>	17
siphonalis, <i>Ochlerotatus</i>	20	vittatus, <i>Ochlerotatus</i>	20
smithii, <i>Wyeomyia</i>	27	walkeri, <i>Anopheles</i>	13
socialis, <i>Uranotenia</i>	26	walkeri, <i>Howardina</i>	26
sollicitans, <i>Ochlerotatus</i>	19	willistoni, <i>Culex</i>	23
spenceri, <i>Ochlerotatus</i>	18	Wyeomyia	27
spissipes, <i>Melanoconion</i>	24	zonatipes, <i>Stegomyia</i>	17
splendens, <i>Hæmagogus</i>	25		

